C-TASC GIS Emergency Management Implementation Plan
Appendix C - GIS Technology Research Report

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Introduction

This appendix presents the GIS Technology Research Report for the GIS Emergency Management Implementation Plan. This plan was developed for the State of Indiana Counter-Terrorism and Security Council (C-TASC) by Innovative Mapping Solutions, LLC (January 2003 – April 2003).

This document includes commercially available off-the-self (COTS) GIS technology, applications and data that have been developed by Federal agencies and are available to state and local governments to support disaster planning, mitigation, preparedness, response and recovery.

The following COTS resources are included in this plan as a first step toward GIS integration:

CATS – Consequence Assessment Tool Set

CAMEO – Computer Aided Management of Emergency Operations

ALOHA – Aerial Locations of Hazardous Atmospheres

HAZUS 99 – Hazard US (Natural Hazard Loss Estimation Methodology)

CVAT – Community Vulnerability Assessment Tool

Inland Waterways Spill Response Mapping Project/Inland Sensitivity Atlas

GNOME - the General NOAA Oil Modeling Environment

ADIOS2 – Automated Data Inquiry for Oil Spills

The State of Indiana has adopted Environmental Systems Research Institute, Inc. (ESRI) as its GIS technology platform; therefore, the focus is on COTS applications and data that are either compatible with ESRI software or are stand alone. Many ESRI-compatible applications are directly compatible with ArcView 3.x but not ArcGIS 8.x. Some data, however, may be compatible through shapefiles.

Application Overview

CATS is an integrated suite of tools for use before, during and after a disaster. Primarily of use in dealing with man-made hazards: chemical, biological, radiological, nuclear or explosive events. The software is free, but there is a $650 annual fee for training and support for non-federal agencies. It includes an extensive GIS database.

CAMEO is an application for use with chemical accidents. It shows the dispersion of airborne contaminants, and gives information on how to respond to specific chemicals. Like CATS, CAMEO is also an integrated set of applications: MARPLOT, CAMEO, ALOHA (which is also a standalone). It is useful in both planning and response. There is no GIS data or capability within CAMEO, but MARPLOT is a mapping program and ALOHA files can be exported to ArcView. CAMEO can also be used for EPCRA (Emergency Planning and Community Right-to-Know Act of 1986) tasks.

ALOHA, as a stand alone application, is used to predict the footprint - shown on a scaled grid - of a gas cloud after an accidental chemical release. It is intended to be easy to use by people unfamiliar with chemicals, emergency response or GIS. The results are a compromise between speed and complexity. It does not include any GIS data or capabilities, but footprints can be exported to ArcView 3.x. ALOHA is also included as an integrated application with CATS and CAMEO.

HAZUS 99 is a GIS-based, nationally consistent, loss-estimation methodology for earthquakes. It includes reports in FEMA-required format, assessment tools, full color maps, and techniques for further data collection. The applications includes substantial GIS data for the Central United States. The next release, HAZUS MH, will include modules for hurricanes and floods.

CVAT is a methodology for conducting a vulnerability assessment. It is primarily a planning tool. The CD also includes a Damage Assessment Tool, which can be used for FEMA reporting. No GIS data is available with the application.

The **Inland Waterways Spill Response Mapping Project** produced an Inland Sensitivity Atlas. It is a compilation of GIS data on the north-central United States: environmentally sensitive areas, hydrology, economically sensitive areas, tribal areas, potential spill sources, etc. The atlas was designed to be used by oil spill planners and responders, but may be used for other projects, as well.

GNOME is an oil spill planning tool which creates a movie to show how an oil spill might behave. The application uses location files, which are maps that include environmental information about specific areas. GNOME will not work without the location files, which are generated by the National Oceanic and Atmospheric Administration. Files for local areas may be requested. Location files may also be exported to ArcView for further analysis.

ADIOS2 is an oil spill response and planning tool. It provides graphs and text analysis of spill trajectories. This is not a GIS product and there is no interface for any GIS products.

GIS Tools Use Matrix

The following chart indicated the intended emergency management application (mitigation, preparedness, response and recovery) of the COTS software addressed in this report.

	CATS	CAMEO	ALOHA	HAZUS99	CVAT	IWSR	GNOME	ADIOS2
MITIGATION	√	√	√	√	√	√	√	√
PREPAREDNESS	√	√	√	√	√	√	√	√
RESPONSE	√	√	√	√		√		
RECOVERY	√			√	√			

	CATS	CAMEO	ALOHA	HAZUS99	CVAT	IWSR	GNOME	ADIOS2
BASIC PLAN								
GENERAL TASK ELEMENTS	√	√	√	√	√	√	√	√
PUBLIC INFORMATIONN ELEMENT	√	√	√	√	√			
OPERATIONS								
COMMUNICATIONS AND WARNING ELEMENT								
INFORMATION AND PLANNING ELEMENT		√	√	√	√	√	√	√
RESOURCE SUPPORT ELEMENT	√	√		√	√	√		
EMERGENCY SERVICE								
FIRE FIGHTING ELEMENT		√	√					
HEALTH AND MEDICAL ELEMENT		√	√					
SEARCH AND RESCUE ELEMENT								
HAZARDOUS MATERIALS ELEMENT	√	√	√		√	√	√	√
LAW ENFORCEMENT ELEMENT	√	√	√					
HUMAN SUPPORT								
SHELTER AND MASS CARE ELEMENT				√	√			
FOOD AND WATER ELEMENT								
ANIMAL HEALTH AND CARE ELEMENT	√	√	√			√		
DONATION/VOLUNTEER MANAGEMENT ELEMENT				√				
INFRASTRUCTURE								
TRANSPORTATION ELEMENT	√	√	√	√	√	√		
PUBLIC WORKS AND ENGINEERING ELEMENT	√			√	√	√		
ENERGY ELEMENT	√			√	√	√		
DAMAGE ASSESSMENT ELEMENT	√	√		√	√	√	√	√
HAZARD SPECIFIC								
TERRORISM CONSEQUENCE MGMT ELEMENT	√	√	√			√		
MEDICTION AND MEDICAL SUPPLY ACQUISITION AND DISTRIBUTION	√							

Links to COTS sites

1. CATS – Consequence Assessment Tool Set
   http://www.saic.com/products/simulation/cats/cats.html
   http://www.dtra.mil/td/acecenter/td_cats_fact.html
   http://www.esri.com/industries/public_safety/cats.html

2. CAMEO – Computer Aided Management of Emergency Operations
   http://response.restoration.noaa.gov/cameo/intro.html

3. ALOHA – Aerial Locations of Hazardous Atmospheres
   http://response.restoration.noaa.gov/cameo/aloha.html

4. HAZUS – Hazard US (Natural Hazard Loss Estimation Methodology)
   http://www.fema.gov/hazus/hz_index.shtm

5. CVAT – Community Vulnerability Assessment Tool
   http://www.csc.noaa.gov/products/nchaz/startup.htm

6. Environmental Protection Agency's Inland Waterways Spill Response Mapping Project
   http://www.umesc.usgs.gov/epa_iwmp.html

7. GNOME - the General NOAA Oil Modeling Environment
   http://response.restoration.noaa.gov/software/gnome/gnome.html

8. ADIOS – Automated Data Inquiry for Oil Spills
   http://response.restoration.noaa.gov/software/adios/adios.html

Additional Applications

There are a number of software applications that are outside the scope of this research, but have very limited or specific use, or are relatively new to the market. An overview of this software is provided below.

Hazard Specific Applications

The Technical Hazards Division of SEMA is responsible for both chemical stockpile (CSEPP) and Radiological (REP) emergency planning at SEMA. The following GIS applications are specific to their needs.

D2PC is an application created by the US military. It may only be used with permission after a reasonable need has been shown. D2PC addresses hazards created from accidental release - either explosion or spill - of chemical agents from arsenals, production facilities and other types of storage. **D2PUFF** is a new, more precise stand alone, which is phasing out D2PC. D2PUFF may also be obtained from the US military by permission only.

HPAC (Hazard Prediction and Assessment Capability) predicts downwind hazard areas resulting from a nuclear reactor accident and has the capability to model nuclear, chemical and biological weapon strikes or accidental releases. Like the D2- programs, HPAC is available only by permission from the Defense Threat Reduction Agency. Additional information can be found at http://www.dtra.mil/td/acecenter/td_hpac.html.

New GIS Applications

1. **Epi Map 2002** and **Epi Info 2002** (http://www.cdc.gov/epo/pub_sw.htm)With Epi Info and a personal computer, epidemiologists and other public health and medical professionals can rapidly develop a questionnaire or form, customize the data entry process, and enter and analyze data. Epi Map then displays geographic maps with the data from Epi Info. CDC administrative boundary files are available on this website for free download for all seven continents.

2. **GATHER**, Geographic Analysis Tool for Health & Environmental Research, (http://gis.cdc.gov/) is an online spatial data access system that provides members of the public health community and general public access to spatial data that is pertinent to the analysis and exploration of public health issues. Functionality and content are focused on the challenges specific to public health professionals as they investigate public health concerns.

3. **E Team** (http://www.eteam.com) has both a **Government** and a **Mobile** edition. With E Team Mobile, you can set up one or more wireless Command Posts and re-deploy them as the situation dictates, and you can have multiple servers in the field. The Government edition enables you to connect all the key personnel at the federal, state, and local levels - sharing data in real time within and across agencies and jurisdictions. It includes an integrated, dynamic ESRI ArcIMS web-mapping application that can geo-locate events at all levels - from national, state and regional to streets, campus views and floor plans - and place event or incident icons at exact locations on the map. It also allows you to keep track of important staff information.

4. **National Fire Maps** (http://www.nifc.gov/firemaps.html) can be found on this website run by the National Interagency Fire Center. It includes links to the USGS multi-agency on-line wildland fire map site (GeoMac), Bureau of Land Management's Airspace Information System, and the USDA Forest Service's Remote Sensing Application Center (RSAC) Fire Maps, among others.

5. **GUMP** and **GUIDO** (www.descinc.com) are emergency response and planning GIS tools from DESC, Inc. GUMP (Geographic Utility for Mitigation and Planning) provides emergency response personal with dynamic access to information about the response environment. It allows virtually any file type to be referenced including, GIS, CAD, photographs, images, documents and pre-plans in a wide variety of formats. The GUMP GIS allows preplans to be stored for selected buildings and linked to neighborhoods, jurisdictions and cities in a single map. It also supports area and distance measurements, analysis, and

identification of key features based on proximity. And any data collected in the field can be stored and accessed within GUMP.

GUIDO (Geo-Urban Infrastructure for Disaster Operations), funded by the Defense Threat Reduction Agency, is an Interface to Arc View, which guides the user through a process of integrating DIG data into a geographically referenced neighborhood, base or campus environment. It will link buildings and floor plans to a municipality's geographic infrastructure and produce a 3D urban topography. GUIDO will aid disaster incident command with logistics, heavy equipment deployment and perimeter control.

6. **GeoNotify** and **GeoStorm** (http://www.bcs-gis.com/pg000009.htm) are products available from Bradshaw Consulting Services, Inc. GeoNotify is a GIS-based desktop mapping interface that allows you to geographically select the areas needing notification. All residents in the hazard area are automatically called and given a recorded warning or evacuation message. GeoStorm is a severe weather early warning which uses data from doppler radar to determine a storms projected path, and notify the public through a telephone notification system.

7. **MxInsight** (http://www.meteorlogix.com/products/mxinsight/GIS/) is a product available from Meteorlogix, a commercial weather service provider. It allows users to integrate weather information into GIS applications. You can directly add weather to your GIS maps, or write your own programs to incorporate weather into your GIS-based decision support systems. The open architecture of MxInsight GIS allows complete customization and user-created applications.

Product Information Layout

Information for each product is provided in the following format:

A. Product Overview (a brief product synopsis of what is contained in sections B & C)
    1. Product Description
        a. Software
        b. GIS Data (metadata summary)
    2. Recommended Use
    3. Sponsor Agency
        a. Point of Contact Information
    4. Product Developer
        a. Point of Contact Information
    5. Current Users
        a. List of Current Users
        b. Reference Sites
        c. Local Users (current state or local government users and their contact information)
    6. Training
    7. Product Contents (list of what is included [or available] - software, data, documentation, etc…)
    8. Product Requirements (e.g. ESRI ArcView 3.x, ArcGIS 8.2, etc…)
    9. How to Get Product (Order/Download Information)
    10. Product History
    11. Planned Enhancements (e.g. When was first release and applications, software evolution, current upgrade status for ArcView 3.x to ArcGIS 8.x – When available, new requirements, etc…)
    12. Data (data sets included)
    13. Summary (Any comments or recommendations we may have regarding this product)
B. Product Materials
    1. Software (CDs/DVD)
    2. Data (CDs/DVD)
    3. Documents (license, manuals, etc…)
C. Product Support Information
    1. Marketing and User Literature

Note: Sections B and C and provided under a separate cover.

1. CATS: Consequences Assessment Tool Set

A. Product Overview

Product Description

CATS predicts the damage and assesses the consequences associated with that damage as a result of a technological or natural hazard. It is an integrated suite of models, described below, with a common GUI. The model used depends on the type of hazard and level of analysis required.

During an emergency, satellite and ground lines receive real-time information about the hazard, including warning messages, meteorological data and site reports. CATS performs an analysis, then damage and resource reports are distributed to on- and off-site personnel.

State and local agencies are **required** to pay $650 annual subscription for training and support.

What CATS Does:

- Designed to work before, during and after a disaster
- Predicts the shape of hazard areas caused by earthquakes, hurricanes or chemical, biological, radiological, nuclear or explosive events
- Estimates collateral damage to military, civil and industrial installations
- Assesses casualties and damage to facilities, resources and infrastructure
- Creates mitigation strategies for both tactical and strategic force support

Includes:

1. Hazard prediction tools
    - Military and terrorist weapons of mass destruction hazards: nuclear, biological and chemical
    - Natural hazards: hurricanes, storm surges and earthquakes
    - Other technological hazards: hazardous materials, high explosives and radiological material
2. Effects assessment tools
    - Population: deaths, injuries and displacement
    - Infrastructure: structural damage and service interdiction
    - Supporting data
    - Over 150 databases and map layers
    - Geo-spatial databases: imagery, maps, population and infrastructure
3. Supporting metadata
    - User data input and modification in real-time
4. Mitigation analysis
    - Logistical, facility, commodity and service resource queries
    - Medical resource queries

Components:

D2PC is an application created by the US military which addresses hazards created from accidental release - explosion or spill - of chemical agents from arsenals, production

facilities and other types of storage. D2PC provides estimates for mortality and onset of symptoms for military accident sites and threshold and immediate danger levels for industrial accident sites.

ALOHA (Areal Locations of Hazardous Atmospheres) combines user input, weather data transmitted from portable monitoring stations, and physical property data to predict how a hazardous gas cloud might disperse in the atmosphere. Sources include broken pipes, leaking tanks and evaporating puddles. Footprints showing threshold and immediate danger levels can be exported to ArcView 3.x for GIS analysis. For more information, see the product overview of ALOHA.

CHAS (Comprehensive Hazard Assessment System) calculates technical hazard distributions and translates the information into casualty probabilities and hazard areas. It uses layman's terms to obtain descriptions of nuclear, chemical and biological hazard sites.

HPAC (Hazard Prediction and Assessment Capability) models nuclear, biological, chemical, radiological and high explosive collateral effects resulting from conventional weapon strikes against enemy weapons of mass destruction production and storage facilities. The HPAC system also predicts downwind hazard areas resulting from a nuclear weapon strike or reactor accident and has the capability to model nuclear, chemical and biological weapon strikes or accidental releases.

OSSM (On-Site Spill Model) CATS includes an abbreviated version of OSSM, which models the trajectory of common pollutants in a marine environment.

HE (High Explosive) is a blast damage model for a single explosion on open ground.

GIS Data (Metadata)

Metadata is not FGDC standard. It includes date last updated, and an explanation of the abbreviations in each table. Specific information on sources is not available.
Over 150 databases and map layers

- support resources locations for specific hazards
- infrastructure objects and facilities (communications, electric power, oil and gas, emergency services, government, transportation, water supply)
- variety of population breakouts

Recommended Use

Man-made hazards
Hurricanes (until HAZUS MH released)
Earthquakes (outside U.S.)

Sponsor Agencies: Federal Emergency Management Agency (FEMA)/Defense Threat Reduction Agency (DTRA)

Point of Contact Information
Defense Threat Reduction Agency
Consequences Assessment Branch (TDOC)
6801 Telegraph Road
Alexandria, VA 22310-3398
Phone: (703) 325-6106/Fax: (703) 325-0398
E-mail: ACEhelp@dtic.mil

Product Developer: Science Applications International Corporation

Point of Contact Information
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SAIC, CATS Program Manager
10260 Campus Point Drive, MSX2
San Diego, CA 92121
Phone: (858) 826-6563/Fax: (858) 826-6174
E-mail: dean.c.kaul@saic.com

Mary Beth Christianson
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San Diego, CA 92121
Phone: (858) 826-6822/Fax: (858) 826-6174
E-mail: marybeth.christianson@saic.com

Current Users

List of Current Users
Corps of Engineers
Defense Threat Reduction Agency
Pacific Disaster Center
US Marine Corps (Camp Lejeune)
FBI
FEMA
Alabama and Colorado EMA
New York City EOC
USAA Insurance

Reference Sites
CATS website http://cats.saic.com/

Local Users
Kim Disbro
Indiana National Guard

53rd CST
2002 S. Holt Road
Indianapolis, IN
Phone: (317) 247-3300 ext. 5050

Training

SAIC provides development, technical, and user support
Basic user training (with subscription)
Telephone (858) 826-6363 and on-line support http://cats.saic.com/ (with subscription)
Additional services

- Advanced and on-site training
- Customization with local databases
- Integration of CAD, met stations, and other data sources

Product Contents

CATS software
ALOHA software (obtained separately from CATS)
HPAC software (obtained separately from CATS – agency must apply and be approved by DTRA to receive software)
Regular software updates
User Manual http://cats.saic.com/
Telephone and website access to CATS technical support
Admission for one person to a CATS basic training class
Membership in the CATS User Group
License Agreement

Product Requirements

Microsoft Windows 95, 98, or NT 4.0 (or later)
ArcView 3.x , Spatial Analyst version 1.x, Street Map version 1.x (optional)
5.4 GB available hard disk storage
256 MB RAM
160 MHz Processor

How to Get Product

Apply on-line at: http://cats.saic.com/
State and local agencies **required** to pay $650 annual subscription
Note: ALOHA and HPAC must be obtained separately. ALOHA is available free to download from http://www.epa.gov/ceppo/cameo/aloha.htm. HPAC is available from DTRA. Application for HPAC approval is included with the CATS application. If approved, software will be shipped separately from CATS.

Product History

In 1993 FEMA began using CATS for hurricanes. Successive upgrades have incorporated other models, and increased the variety of hazards. Version 4.52 is still in use, but 4.6 is the most current.

Future Enhancements

Upgrade to ArcGIS 8.x compatibility late 2003

Data

U.S. Geological Survey
Surficial Geology Data

Environmental Protection Agency
Sewage treatment plants
Water treatment plants
Municipal/ industrial power discharge points
Water quality monitoring stations

Census Bureau
1990 census population and housing demographics

FEMA Master Database
Agriculture
Energy
Transportation
Communication
Manufacturing
Energy
Health
Finance
Education
Government

National Decision Systems/ Equifax
Businesses (10 million) for CATS Response, Recovery, and Sustainability Module

ESRI
Digital chart of the world
Tier 1 Databases (Roads, Bridges, Rivers, etc.)

National Weather Service
Meteorological Data

Below is a listing of the majority of databases supplied with CATS.

FEATURE	SOURCE	DATED
1990 Housing by Zip Code	FEMA Master	4/1/92
Air Flight Service Stations	FEMA Master	3/4/92
Air Navigational Aids	FEMA Master	1992
Airports	FEMA Master	1995
Airports – Air Force	FEMA Master	1992
Airports – Army	FEMA Master	1992
Airports – Naval	FEMA Master	1992
Airports – Private	FEMA Master	1992
Airports – Public	FEMA Master	1992
Airports (US Territories)	FEMA Master	1992
Airports (World)	DCW (ESRI)	1992
Airports <= 5000 ft.	FEMA Master	4/29/92
ATF	FEMA Master	1992
Borders & Shoreline	DCW (ESRI)	1992
Chemical Plants	FEMA Master	3/2/92
Coal Mines	FEMA Master	2/8/92
Coast Guard	FEMA Master	1992
Coke Plants	FEMA Master	2/28/92
Communications Nodes	FEMA Master	2/3/92
Counties by Centroid	FEMA Master	3/4/92
Country Name	DCW (ESRI)	1992
DEA	FEMA Master	1992
Deep Water Locks and Dams	FEMA Master	3/2/92
Department of Justice	FEMA Master	1992
Department Stores	FEMA RRS	1995
Drugs	FEMA RRS DMAT	1995
Electric Power Plants	FEMA Master	2/28/92
Electric Power Plants	FEMA Master	1992
Electrical Appliances	FEMA RRS	1995
Electro Medical Equipment	REMA RRS DMAT	1995
Electronic Parts	FEMA RRS	1995
Emergency Broadcast System	FEMA Master	2/3/92
Energy Import Facilities	FEMA Master	2/28/92
Energy Import Facilities	FEMA Master	1992
ESRI Streetmap	FEMA Master	1992
Fabric Mills	FEMA RRS	1995
Factories (Primary)	FEMA Master	2/28/92
FBI	FEMA Master	1992
FEMA Personnel	FEMA Master	2/3/92
FEMA Regional Centers	FEMA Master	3/4/92
FEMA Regional Centers	FEMA Master	1992
FEMA Regions and States	FEMA Master	1992
Fire Department	FEMA RRS	1995

FEATURE	SOURCE	DATED
Furniture Stores	FEMA RRS	1995
Government Databases	FEMA Master	2/28/92
Hand Tools	FEMA RRS	1995
Hardware	FEMA RRS	1995
Helicopter Pads	FEMA Master	4/29/92
Hospitals	FEMA RRS DMAT	Unknown
Housing and Urban Development Field Offices	FEMA Master	3/2/92
Ice Manufacture	FEMA RRS	1995
Immigration	FEMA Master	1992
Industrial Machinery	FEMA RRS	1995
Inland Waterways Locks and Dams	FEMA Master	3/2/92
Interstate Structures (bridges)	FEMA Master	1/21/92
Irrigation Dams	FEMA Master	3/2/92
Lakes	DCW (ESRI)	1992
Land Masses & Ocean	DCW (ESRI)	1992
Lawlegal	FEMA Master	1992
Livestock Inventory	FEMA Master	3/2/92
Local Emergency Operations Centers	FEMA Master	3/4/92
Lumber Building Materials	FEMA RRS	1995
Lumber Plywood	FEMA RRS	1995
Major Postal Sites	FEMA Master	3/5/92
Medical Hospital Supply	FEMA RRS DMAT	1995
Medical Personnel	FEMA Master	12/17/91
Miscellaneous Companies	FEMA RRS	1995
Motors Generators	FEMA RRS	1995
Natural Gas Plants	FEMA Master	2/28/92
Natural Gas Storage	FEMA Master	2/28/92
Networks	FEMA Master	2/3/92
Night Time Population	1990 Census Data	1992
Nuclear Power Plants	FEMA Master	2/28/92
Nuclear Reactors	HPAC Reactor Data File	1994
Oil Refineries	FEMA Master	2/28/92
Oil Refineries	FEMA Master	1992
Opthalmic Goods	FEMA RRS DMAT	1995
Pharmaceutical Preps	FEMA RRS DMAT	1995
Plastic Bottles	FEMA RRS	1995
Police Departments	FEMA Master	1992
Populated Places	DCW (ESRI)	1992
Population (World, GRID)	Landscan	1998
Populations (US)	1990 Census Data	1990
Ports: Inland Waterways and Terminals	FEMA Master	3/2/92
Ports: West Coast	FEMA Master	3/2/92
Ports: East Coast	FEMA Master	3/4/92
Prison Facilities	FEMA Master	2/28/92

FEATURE	SOURCE	DATED
Public Broadcast System	FEMA Master	2/3/92
Radio Telephone Equipment	FEMA RRS	1995
Radio TV Communications	FEMA RRS	1995
Railroad Bridges	FEMA Master	3/2/92
Railroad Computers	FEMA Master	3/2/92
Railroad Controls	FEMA Master	3/2/92
Railroad Interfaces	FEMA Master	3/2/92
Railroad Interlockings	FEMA Master	3/2/92
Railroad Miscellaneous Sites	FEMA Master	3/2/92
Railroad Repair Shops	FEMA Master	3/2/92
Railroad Sites	FEMA Master	1992
Railroad Tunnels	FEMA Master	3/2/92
Railroad Yards	FEMA Master	3/2/92
Railroads	FEMA Master	3/2/92
Response, Resources & Sustainability Airports	FEMA Master	1992
Response, Resources & Sustainability Mobility Sites	FEMA Master	3/4/92
Response, Resources & Sustainability Runways	FEMA Master	1992
Rivers	DCW (ESRI)	1992
Rivers (World)	DCW (ESRI)	1992
Roads	DCW (ESRI)	1992
Roads (World)	DCW (ESRI)	1992
Saeboard Coastline	FEMA Master	1992
Sanitary Paper Products	FEMA RRS	1995
Sewage Treatment Plants	FEMA Master	1992
Shaded Relief	Chaulk Butte, Inc	
Shaded Relief (World)	Chaulk Butte, Inc	
Soap Detergents	FEMA RRS	1995
Softdrinks	FEMA RRS	1995
Sporting Goods	FEMA RRS	1995
State Emergency Operations Centers	FEMA Master	3/4/92
Stockpil	FEMA Master	1992
Strategic Reserve	FEMA Master	2/28/92
Superfund Sites	FEMA Master	1992
Surgical Appliances	FEMA RRS DMAT	1995
Surgical Medical	FEMA RRS DMAT	1995
Tank Farms	FEMA Master	2/28/92
Tank Farms	FEMA Master	1992
Urban Areas	DW (ESRI)	1992
US Attorneys	FEMA Master	2/28/92
US Customs	FEMA Master	1992
US Marshals	FEMA Master	1992
US Postal Vehicle Maintenance	FEMA Master	3/5/92
US Secret Service	FEMA Master	1992
VA Cemetery Sites	FEMA Master	3/2/92

FEATURE	SOURCE	DATED
VA Hospital Staff	FEMA RRS DMAT	3/2/92
VA Hospitals	FEMA RRS DMAT	3/2/92
Water Supply	FEMA RRS	1995
Water Supply Dams	FEMA Master	3/2/92
Water Supply Dams	FEMA Master	1992
Weather Stations	FEMA Master	3/4/92
Wholesale Grocery	FEMA RRS	1995
X-Ray Apparatus	FEMA RRS DMAT	1995

Summary

CATS combines the most commonly used models for a number of hazards under a single GUI. The application has the advantage of working with ArcView platforms, and also includes GIS data.

SAIC also offers JACE-CATS (Joint Assessment of Catastrophic Events). It is a tool for military and National Guard use that works with CATS. It is not available to the general public, but is mentioned here to avoid confusion with the standard CATS suite.

CATS use for hurricanes and earthquakes in the U.S. is being phased out in favor of the HAZUS MH suite. Based on that, CATS should be used for man-made hazards (e.g. WMD, radiation, nuclear accidents). Training on hurricane or earthquake hazards would be unnecessary after HAZUS MH comes on line. Planned release for the upgrades to HAZUS is April 2003.

B. Product Materials

CD

[CATS software unavailable without subscription]
CATS User Manual
ALOHA 5.2.3
ALHOA Manual
ALOHA ArcView 3.x Extension
License Agreement

C. Product Support Information

Marketing and User Literature

CATS Website http://cats.saic.com/

"Crisis Prediction Disaster Management." Swiatek, Joseph and Dean Kaul. June 1999. http://www.saic.com/products/simulation/cats/VUPQPV4R.pdf

Faster, Higher, Safer. *Government Technology*, October 2001.
http://www.govtech.net/magazine/story.phtml?id=6085

Super Bowl XXXVII: CATS Was There. *SAIC Cover Story*. January 26, 2003.
http://www.saic.com/cover-archive/natsec/cats.html

ESRI News - Fall 1999 ArcNews -- CATS for Emergency Response. *ArcNews*, Fall 1999.
http://www.esri.com/news/arcnews/fall99articles/07-catsemer.html

User Forum http://cats.saic.com/

2. CAMEO: Computer-Aided Management of Emergency Operations

A. Product Overview

Product Description

CAMEO is an integrated set of applications: ALOHA, MARPLOT and CAMEO (see below). It is designed to help first responders and emergency planners plan for and quickly respond to chemical accidents.

Responders can use CAMEO to quickly learn about chemicals involved in an accident, keep track of the locations of dangerous chemicals and vulnerable places like schools, hospitals, and nursing homes, and predict the possible effects of a toxic gas release.

CAMEO was designed to help organizations meet their EPCRA (Emergency Planning and Community Right-to-Know Act of 1986) responsibilities. EPCRA establishes requirements for federal, state, and local governments, and for industry for emergency planning and "community right-to-know" reporting on hazardous and toxic chemicals (see EPCRA for more information http://www.epa.gov/ceppo/cameo/help/913330). CAMEO can be used for EPCRA-related tasks like:

- Maintaining and reviewing Tier II information submitted by local facilities in the area
- Assessing the hazards to communities from accidental releases of locally stored hazardous chemicals

CAMEO

Includes 9 modules:

Chemical Library - contains records for more than 6,000 hazardous substances, including names, ID numbers, regulatory information, and labeling conventions

Facilities - store information about where chemicals are maintained - address, emergency contact information, site plans

Chemicals in Inventory - maintain records for stored chemicals - descriptions, storage conditions and locations, quantities

Contacts - telephone and address directory of people who can help with emergency planning or response

Screening & Scenarios - make hazards analyses

Routes - compile information about routes commonly used to transport chemicals

Incidents - track information about accidental spills of hazardous chemicals

Resources - information about supplies, experts, and contractors, etc. to quickly access during a response, or are useful in planning

Special Locations - descriptions of schools, nursing homes, hospitals, etc.

ALOHA

ALOHA (Areal Locations of Hazardous Atmospheres) combines user input, weather data transmitted from portable monitoring stations, and physical property data to predict how

a hazardous gas cloud might disperse in the atmosphere. Footprints can be exported to ArcView 3.x for GIS analysis. For more information, see the product overview of ALOHA.

MARPLOT
MARPLOT is the mapping component of CAMEO, and can display an ALOHA footprint on an electronic map. MARPLOT maps can be amended to show important items, like facilities storing hazardous materials or populations of special concern. Additional information about these locations (such as addresses, hours of opening, and phone numbers for emergency contacts) can be stored in other CAMEO databases. MARPLOT's search feature, allows users to view this information, assess the degree of hazard posed by an incident and decide how to respond to it.

Map data for MARPLOT comes from a variety of sources. All of the TIGERline data from the Bureau of the Census (roads, water bodies, railroads) is available in MARPLOT format and can be downloaded for free. The MARPLOT files themselves are compact and platform-independent.

Other source data, in a number of formats, can be translated into MARPLOT files. For example, data from the LandView V 2-DVD set can be used in MARPLOT. LandView V, a viewing application, contains EPA-regulated sites, 2000 Census Summary File1 demographic data, geographic boundaries (states, counties, cities, congressional districts, etc.), Geographic Names Information System (GNIS) Features and selected Federal Lands from the USGS National Atlas.

GIS Data (Metadata)
No GIS data comes with the software. It is designed to be used with MARPLOT as a companion mapping program. TIGERline and other census data was converted to MARPLOT format by the Interagency LandView Team (EPA, Census Bureau, US Geological Survey, and NOAA). The files are available free of charge from http://www.epa.gov/ceppo/cameo/marmaps/.

Recommended Use
Chemical accidents

Sponsor/Developer Agencies: U.S. Environmental Protection Agency and National Oceanic and Atmospheric Administration (NOAA), Office of Response and Restoration (OR&R)

Point of Contact Information
EPA
John Elkmann
Region V CAMEO Contact
77 West Jackson Boulevard
Chicago, IL 60604

Phone: (312) 353-8196
Email: elkmann.john@epa.gov

Point of Contact Information
Mark Miller
NOAA OR&R
7600 Sand Point Way NE
Seattle, Washington 98115
Phone: (206) 526-6317 / Fax: (206)526-6329
Direct Line: (206)526-6272
E-mail: mark.w.miller@noaa.gov

General CAMEO Specialist: ORR.CAMEO@noaa.gov

Current Users

List of Current Users
City of Evansville/Vanderburgh County EMA and LEPC
City of Evansville Fire Department
Johnson County EMA and LEPC
Vigo County EMA and LEPC
Marion County EMA and Health Department
Jefferson County EMA and LEPC

Harvard Center for Continuing Professional Education
http://www.hsph.harvard.edu/ccpe/

How high school students in Chelsea, Massachusetts, used CAMEO
http://www.govtech.net/publications/gt/1998/jan/covera/covera.phtml

Reference Sites
EPA's CAMEO Website: Get CAMEO, join the CAMEO technical discussion, or access training materials and other information http://www.epa.gov/ceppo/cameo/

EPA's Chemical Emergency Preparedness and Prevention Office
http://yosemite.epa.gov/oswer/ceppoweb.nsf/content/index.html

Learn how people use CAMEO and other tools from NOAA OR&R and EPA to respond to oil spills and chemical accidents http://response.restoration.noaa.gov/tours/tour.html

Download free MARPLOT maps of US counties, boroughs, and/or territories
http://www.epa.gov/ceppo/cameo/marmaps/

Local Users
Indiana State Emergency Management Agency (SEMA)
Dave Crose, Director
Technical Hazards Division

302 W. Washington Street Room E-208
Indianapolis, IN 46204
Phone: (317) 232-3837 / E-mail: dcrose@sema.statie.in.us

Training

Training is available through SEMA, often on a case-by-case basis. Contact the following to schedule or get more information on training:

Indiana State Emergency Management Agency (SEMA)
302 W. Washington Street Room E-208
Indianapolis, IN 46204
Kathy Dayhoff-Dwyer
Phone: (317) 234-2583 / E-mail: kddwyer@sema.state.in.us
Ian Ewusi-Wilson
Phone: (317) 232-4679 / E-mail: iewilson@sema.state.in.us

For training arranged by EPA regional offices, closest sessions are in Kentucky: 1.) July 8-10, 2003, Central Kentucky; and 2.) September 15-18, 2003, Eastern Kentucky. Both are sponsored by EPA-Region 4. Contact Elisa Roper at (404) 562-9174 for registration and directions. Check CAMEO training and events calendars (www.epa.gov/ceppo/cameo/cam-evnt.htm).

CAMEO help files http://www.epa.gov/ceppo/cameo/help/cameoTOC.htm

CAMEO components guided tours http://www.epa.gov/ceppo/cameo/tours.htm

Product Contents

CAMEO*fm*
CAMEO Manual
ALOHA 5.2.3
ALOHA Manual
MARPLOT 3.3
MARPLOT Manual
License Agreement
ArcView 3.x Extension http://response.restoration.noaa.gov/cameo/avx.html

Product Requirements

IBM or Compatible 486 (Pentium recommended)
Microsoft Windows 95/98/NT
VGA Color Monitor
8 MB RAM (16 MB recommended)
50 MB free hard disk space

How to Get Product

Download from http://www.epa.gov/ceppo/cameo/request.htm Note: you must download CAMEO, ALOHA and MARPLOT components separately.
Order a copy online at http://www.epa.gov/ceppo/cameo/reqform.htm

Product History

CAMEO initially was developed because NOAA recognized the need to assist first responders with easily accessible and accurate response information. Since 1988, EPA and NOAA have collaborated to augment CAMEO to assist both emergency responders and planners. CAMEO has been enhanced to provide emergency planners with a tool to enter local information and develop incident scenarios to better prepare for chemical emergencies. The Bureau of Census and the U.S. Coast Guard have worked with EPA and NOAA to continue to enhance the system.

Current Versions:
CAMEO*fm*
ALOHA 5.2.3
MARPLOT 3.3

Planned Enhancements

Upgrade to ArcGIS 8.x compatibility planned for late 2003.
Planned updates to sources and recommendations in the chemical library (currently in planning stages).

Data

The GIS data (MARPLOT) is not included with CAMEO, but easily downloadable on the internet. It is included below for the sake of completeness.

FEATURE	SOURCE	DATED	FORMAT
Chemical Library			
Information on 6,000 chemicals	CAMEO	May 2002	Text
MARPLOT			
Roads, water bodies, railroads	US Census TIGERline	2001	Lines, Polygons

Summary

CAMEO's strongest asset is the chemical library, specifically the Response Information Data Sheets (RIDS) section. It contains general descriptions of the chemicals, physical properties, fire and health hazards. It also includes recommendations for firefighting and non-fire response, first aid, and protective clothing for response.

The lack of GIS data is a drawback, as is the fact that CAMEO does not sit on top of any ArcView platforms. The extension allows files to be imported into ArcView 3.x (and eventually

ArcGIS 8.x), but the extra step can be cumbersome if you're working on a number of different scenarios.

The application is relatively small, and works quickly, though is limited in order to achieve these benefits. There is also an extensive user community and support available.
A word about MARPLOT and MARPLOT files: it is a mapping program **only**, not a true GIS. This limitation, combined with the accuracy issues of TIGERline files, makes using MARPLOT less desirable – even for counties with little or no GIS capability – than ArcView.

B. Product Materials

CD

CAMEO*fm*
CAMEO Manual
ALOHA 5.2.3
ALHOA Manual
ALOHA ArcView 3.x Extension
MARPLOT 3.3
MARPLOT Manual
CAMEO License Agreement

C. Product Support Information

Marketing and User Literature

NOAA Oil and Hazardous Materials Spill Reports, May 2001 *(on CD only)*

CAMEO Factsheet http://www.response.restoration.noaa.gov/cameo/pdf/cameo.pdf

EPA's CAMEO website http://www.epa.gov/ceppo/cameo/index.htm

NOAA's CAMEO website http://response.restoration.noaa.gov/cameo/intro.html

General information from EPA http://www.epa.gov/ceppo/cameo/what.htm##order

CAMEO help files http://www.epa.gov/ceppo/cameo/help/cameoTOC.htm

To subscribe to the CAMEO News Service, send mail to join-cameo@lists.epa.gov

CAMEO Technical Discussion
https://yosemite.epa.gov/oswer/cameodisc.nsf/8178b1c14b1e9b6b8525624f0062fe9f!OpenView

Support forum for CAMEO http://www.epa.gov/ceppo/cameo/support.htm

CAMEO Toolkit: Includes information and links for ALOHA, MARPLOT and CAMEO
http://www.response.restoration.noaa.gov/cameo/toolkit.html

LandView 5 Overview http://landview.census.gov/geo/landview/lv5/lv5.html

LandView 5 Product Profile http://landview.census.gov/geo/landview/lv5/prodprof.pdf

LandView 5 Ordering Information http://landview.census.gov/mp/www/rom/msromlv45.html

Landview 5 Sample Data http://landview.census.gov/geo/landview/lv5help/deprofile.gif

3. ALOHA: Areal Locations of Hazardous Atmospheres

A. Product Overview

Product Description

ALOHA combines 1.) User input; 2.) Weather data transmitted from portable monitoring stations and/or manually input; and 3.) Physical property data from a chemical library. ALHOA uses this information to predict how a hazardous gas cloud might disperse in the atmosphere after an accidental chemical release. Users can predict rates of release from broken gas pipes, leaking tanks, and evaporating puddles, and model the dispersion of both neutrally-buoyant and heavier-than-air gases.

Footprints are created on a scaled grid. They can then be exported to companion mapping programs, including MapInfo, ArcView 3.x, and MARPLOT. The footprints can be laid over maps to show the gas cloud in relation to the user's GIS data (hospitals, evacuation routes, emergency response centers, etc.).

ALOHA is an emergency response model, intended for rapid deployment by responders and for emergency planning. It is relatively quick and dirty – it does not account for fires, chemical solutions/mixtures, chemical reactions, particulates or topography.

How ALOHA works:

1. Enter location, time and date of spill
2. Choose chemical from ALOHA library
3. Enter information about weather conditions
4. Describe spill in terms of chemical escape
5. ALOHA provides footprint, graphs and text information

ALOHA is also included as an integrated application with CATS and CAMEO

GIS Data (Metadata)

No GIS data comes with the software. It is designed to be used with a companion mapping program and data.

Recommended Use

Chemical accidents

Sponsor/Developer Agencies: U.S. Environmental Protection Agency (EPA) and National Oceanic and Atmospheric Administration (NOAA), Office of Response and Restoration (OR&R)

Point of Contact Information
EPA
John Elkmann

Region V CAMEO Contact
77 West Jackson Boulevard
Chicago, IL 60604
Phone: (312) 353-8196
Email: elkmann.john@epa.gov

Point of Contact Information
Mark Miller
NOAA OR&R
7600 Sand Point Way NE
Seattle, Washington 98115
Phone: (206) 526-6317 / Fax: (206)526-6329
Direct Line: (206)526-6272
E-mail: mark.w.miller@noaa.gov

Technical Support
Phone: (703) 816-4434
E-mail: userrmp.usersupport@epcra.org

Current Users

List of Current Users
City of Evansville/Vanderburgh County EMA and LEPC
City of Evansville Fire Department
Johnson County EMA and LEPC
Vigo County EMA and LEPC
Marion County EMA and Health Department
Jefferson County EMA and LEPC

Reference Sites
EPA's CAMEO website, which includes ALOHA reference information
http://www.epa.gov/ceppo/cameo/index.htm

NOAA's CAMEO website, which includes ALOHA reference information
http://response.restoration.noaa.gov/cameo/intro.html

Download free MARPLOT maps of US counties, boroughs, and/or territories
http://www.epa.gov/ceppo/cameo/marmaps/

Guided Tour http://response.restoration.noaa.gov/tours/chemtour/chem_1.html

Local Users
Indiana State Emergency Management Agency (SEMA)
Dave Crose, Director
Technical Hazards Division
IERC

302 W. Washington Street Room E-208
Indianapolis, IN 46204
Phone: (317) 232-3837 / E-mail: dcrose@sema.statie.in.us

Training

Training is available through SEMA, often on a case-by-case basis. Contact the following to schedule or get more information on training:

Indiana State Emergency Management Agency (SEMA)
302 W. Washington Street Room E-208
Indianapolis, IN 46204
Kathy Dayhoff-Dwyer
Phone: (317) 234-2583 / E-mail: kddwyer@sema.state.in.us
Ian Ewusi-Wilson
Phone: (317) 232-4679 / E-mail: iewilson@sema.state.in.us

Product Contents

ALOHA Software http://www.epa.gov/ceppo/cameo/aloha.htm
ALOHA Manual http://www.epa.gov/ceppo/cameo/pubs/aloha.pdf
ArcView 3.x Extension http://response.restoration.noaa.gov/cameo/avx.html

Product Requirements

Microsoft Windows (Version 3.0 or later)
At least 1 MB of RAM

How to Get Product

Download from http://www.epa.gov/ceppo/cameo/aloha.htm

ALOHA 5.2.3 software http://www.epa.gov/ceppo/cameo/aloha.htm
Manual http://www.epa.gov/ceppo/cameo/pubs/aloha.pdf
ArcView 3.x Extension http://response.restoration.noaa.gov/cameo/avx.html

Product History

ALOHA was first written in the early 1980s as a passive gas plume model for in-house use by NOAA during emergency responses. A chemical property library, meteorological station serial port interface, and base-mapping were added in the mid-1980s, and an energy-balance pool evaporation algorithm was added in the late 1980s.

ALOHA 5.2.3 (Summer 1999)
ALOHA 5.2.2 (Fall 1997)
ALOHA 5.2.1 (Winter 1996)
ALOHA 5.2 (Fall 1995)
ALOHA 5.1 (Fall 1992)

ALOHA 5.05 (Fall 1991)
ALOHA 5.0 (Fall 1990)

Complete list of changes made to each release:
http://response.restoration.noaa.gov/cameo/alohafaq/history.html

Planned Enhancements

Upgrade to ArcGIS 8.x compatibility planned for late 2003

Data

GIS data is not included with ALOHA.

FEATURE	SOURCE	DATED	FORMAT
Chemical Library			
Physical properties of 1,000 common dangerous chemicals	Design Institute for Physical Property Data/CAMEO	1999/ May 2002	Text

Summary

ALOHA's focus is on being quick and user-friendly. It was specifically designed for inexperienced responders to use during high-pressure situations. It checks and cross-checks information entered before calculating footprints, and runs on small systems. The downside, however, is that the results are limited. It will give the responder a good idea of what to expect, but not a precise model.

In addition to being a stand alone, ALOHA has also been integrated into multiple-hazard modeling software, like CAMEO and CATS, as the chemical accident module. In the case of CAMEO, this can cause some problems. Even though ALOHA is a component of CAMEO, they may give different results for the same scenario. CAMEO has incorporated calculations from the Technical Guidance (or Green) Book. The purpose of the Green Book is to be able to prioritize a number of hazards based on their threat level. ALOHA is designed to provide a specific footprint for a single accident.

Although ALOHA files may be exported to ArcView 3.x, ALOHA does not sit on top of it. Changes to any scenarios require re-exporting the footprint to ArcView.

B. Product Materials

CD

ALOHA 5.2.3

Manual
Guided Tour
ArcView 3.x Extension

C. Product Support Information

Marketing and User Literature

ALOHA Factsheet http://www.response.restoration.noaa.gov/cameo/pdf/aloha.pdf

EPA's CAMEO website, which includes ALOHA reference information
http://www.epa.gov/ceppo/cameo/index.htm

NOAA's CAMEO website, which includes ALOHA reference information
http://response.restoration.noaa.gov/cameo/intro.html

ALOHA Problem Solver Page http://www.epa.gov/ceppo/cameo/asolver.htm

Support forum for CAMEO (includes ALOHA discussions)
http://www.epa.gov/ceppo/cameo/support.htm

CAMEO Technical Discussion (includes ALOHA support)
https://yosemite.epa.gov/oswer/cameodisc.nsf/8178b1c14b1e9b6b8525624f0062fe9f!OpenView

ALOHA FAQ Page http://response.restoration.noaa.gov/cameo/alohafaq/faq.html

Archive of the "Ask Dr. ALOHA" newsletter column
http://www.response.restoration.noaa.gov/cameo/dr_aloha/index.html

ALOHA Decision Keys: Step-by-step keys to decide whether you should use ALOHA
http://www.response.restoration.noaa.gov/cameo/decision/keyindex.html

The ALOHA Decisions Game. Test your skill at telling when you can and can't use ALOHA
http://www.response.restoration.noaa.gov/cameo/decision/decisiongame.html

ALOHA Technical Description. Some technical details about ALOHA and how it makes its calculations http://www.response.restoration.noaa.gov/cameo/alotech/alotech.html

The Level of Concern Page: Information to help you choose and use a Level of Concern (LOC) in ALOHA http://www.response.restoration.noaa.gov/cameo/locs/LOCpage.html

Evaporation Calculator http://response.restoration.noaa.gov/cameo/evapcalc/evap.html

Modeling Hydrochloric Acid Evaporation in ALOHA
http://www.response.restoration.noaa.gov/cameo/hcl.pdf

Met Station Vendor List http://www.response.restoration.noaa.gov/cameo/sams.html

4. HAZUS: Hazards United States

4.1 HAZUS 99

A. Product Overview

Product Description

HAZUS 99 is a GIS-based, nationally consistent, loss-estimation methodology for earthquakes. It includes reports in FEMA-required format, assessment tools, full color maps, and techniques for further data collection (InCAST) to improve analysis.

What HAZUS does:

- Characterizes hazard (ground shaking, liquefaction, landslides)
- Estimates damage to buildings and lifelines from initial and secondary causes
- Estimates casualties, displacement, shelter needs
- Estimates economic losses

Three levels of analysis:

Level 1: Uses national data (included)
Level 2: More specific, employs locally gathered data as entered by user
Level 3: Customized, requires expert input (e.g. engineer), includes locale-specific scenarios - tsunami, seiche, dam breaks, etc.

Six Modules:

1. Potential Earth Science Hazard: What happens to the earth
2. Inventory and Exposure Data
   Four Inventory Groups:
   - General Building Stock
   - Essential and High Potential Loss Facilities
   - Transportation
   - Utilities

   Exposure Data:
   - Demographics from 1990 census at census tract level
3. Direct Damage: Estimated losses to the four inventory groups (above)
4. Induced Damage: Secondary damage from fire, flooding, etc.
5. Direct Losses: Immediate economic and social losses
6. Indirect Losses: Long term effects on community

GIS Data (Metadata)

Non-proprietary building stock, essential facilities, high potential loss facilities, population, and regional economy for Central Region are included with the software package. The metadata documentation is included on the CD, and available on-line at www.fema.gov/hazus. The 39 datasets are described in accordance with FGDC standards for metadata.

Recommended Use

Earthquakes

Sponsor Agency: Federal Emergency Management Agency (FEMA)

Point of Contact Information

Claire Drury, Program Manager
FEMA, Mitigation Directorate
500 C Street, SW
Washington D.C. 2005
Phone: (202) 646-2884/Fax: (202) 646-2577
E-mail: Claire.drury@fema.gov

Lindsay Butler, Mitigation Specialist
FEMA, Region V HAZUS 99 Contact
536 South Clark St.
Chicago, IL 60605
Phone: (312) 408-5226
Lindsay.butler@fema.gov

Rich Roths, Mitigation Specialist
FEMA, Region V HAZUS 99 Contact
536 South Clark St.
Chicago, IL 60605
Phone: (312) 408-5324
E-mail: richard.roths@fema.gov

Product Developer: National Institute of Building Sciences (NIBS)

Point of Contact Information

Philip Schneider
Director, Multihazard Loss Estimation Program
National Institute of Building Sciences
1090 Vermont Ave NW, 7th Floor
Washington D.C. 2005
Phone: (202) 289-7800/Fax: (202) 289-1092
E-mail: pschneider@nibs.org

Current Users

List of Current Users

HAZUS User Groups:

San Francisco Bay Area http://www.hazus.org/BAHUG/index.htm

Montana http://www.hazus.org/BigSkyHUG/index.htm

Delaware http://www.hazus.org/DEHUG/index.htm

Louisiana http://www.hazus.org/LAHUG/index.htm

New England http://www.hazus.org/NewEnglandHUG/index.htm

Nevada http://www.hazus.org/NVHUG/index.htm

Southeast http://www.hazus.org/SEHUG/index.htm

Southwesthttp://www.hazus.org/SWHUG/index.htm

Southern California http://www.hazus.org/SoCalHUG/index.htm

Reference Sites

www.fema.gov/hazus FEMA's HAZUS homepage

www.nibs.org/hazus.htm National Institute of Building Sciences' HAZUS homepage

www.hazus.org includes links to user groups, topical information on earthquakes, wind and flood, on-line and on-site technical assistance

Local Users

State Emergency Management Agency
302 W. Washington Street, Room W046
Indianapolis, IN 46204
John Steel, Earthquake Program Manager
Phone: (317) 233-6519 / E-mail: jsteel@sema.state.in.us
Mary Moran, Program Coordinator, Hazard Mitigation
Phone: (317) 232-3831 / E-mail: mmoran@sema.state.in.us
Jan Crider, Hazard Mitigation
Phone: (317) 232-3833 / E-mail: jcrider@sema.state.in.us

Dr. Nasim Uddin
University of Evansville
1800 Lincoln Avenue
Evansville, IN 47722
Phone: (812) 479-4629 / Fax: (812) 479-2780
E-mail: nu4@evansville.edu

Training

Available from local and regional user groups
Some on-site training possibilities available on a case-by-case basis (Info available at http://www.hazus.org)

Product Contents

HAZUS 99 Software
Central Region data sets
User and technical manuals
Computer-based tutorial
InCAST: Inventory collection tool for multi-hazards

Product Requirements

Intel Pentium 800 MHz or better (recommended)
10 GB hard drive
128 MB RAM (256 recommended)
Windows98 or higher
MapInfo 6.0/6.5 or ArcView 3.2a

How to Get Product

Order on-line from www.fema.gov/hazus or phone (800) 480-2520

Product History

First released 1997, second updated release in 1999
Detailed history at http://www.fema.gov/hazus/hs_eqdev.shtm

Planned Enhancements

Tornado and winter storm modules planned for the future
See section 4.2 for HAZUS MH details

Data

Risk Management Solutions, Inc. (RMS) of Menlo Park, California was contracted by the National Institute of Building Sciences to develop all databases for HAZUS 99. The sources listed are those which gave data to RMS. Metadata documentation was compiled by RMS.

FEATURE	SOURCE	DATED	FORMAT
General Building Stock			
General Building Stock	1990 Census/ Dun & Bradstreet	1990/1996	None
Essential Facilities			
Medical Care Facilities	American Hospital Association	1999	Point
Emergency Response Facilities	FEMA/ProCD Electronic Phonebook	1994/1996	Point
Schools	ProCD Electronic Phonebook	1996	Point

FEATURE	SOURCE	DATED	FORMAT
High Potential Loss Facilities			
Dams	FEMA	1996	Point
Nuclear Power Plants	US Nuclear Regulatory Commission	Unknown	Point
Hazardous Materials Sites	EPA	1996	Point
Highway Systems			
Bridges	Federal Highway Administration	1996	Point
Roads	WESSEX	1996	Line
Tunnels	Federal Highway Administration	1996	Point
Railway Systems			
Bridges	Federal Highway Administration	1996	Point
Tracks	WESSEX	1996	Line
Railway Tunnels	Federal Highway Administration	1996	Point
Railway Facilities	FEMA	1996	Point
Bus System Facilities			
Facilities	FEMA	1996	Point
Port System			
Facilities	FEMA	Unknown (pre-1994)	Point
Airport Systems			
Airport Facilities	FEMA	Unknown (pre-1994)	Point
Airport Runways	FEMA	1992	Point
Portable Water Supply System			
Transmission Pipelines	Applied Technology Council	Unknown	Line
Facilities	Applied Technology Council	Unknown	Point
Distribution Pipelines	Risk Management Solutions, Inc.	Unknown	Polygon
Wastewater Systems			
Facilities	FEMA	Unknown	Point
Distribution Sewers	Risk Management Solutions, Inc.	Unknown	Polygon
Oil Systems			
Pipelines	Applied Technology Council	Unknown	Line
Facilities	Applied Technology Council	Unknown	Point
Natural Gas Systems			
Pipelines	Applied Technology Council	Unknown	Line
Facilities	Applied Technology Council	Unknown	Point
Electrical Power System			
Facilities	FEMA	Unknown	Point

FEATURE	SOURCE	DATED	FORMAT
		(pre-1994)	
Communication System			
Facilities	FEMA	1992	Point
Census Data			
	US Census Bureau	1990	Polygon
Potential Earth Science Hazards			
Historical Epicenter	National Geophysical Data Center	1985	Point
Faults	United States Geological Survey	1998	Polyline

Summary

HAZUS 99 contains only earthquake capabilities at this point. Additional upgrades and modules are planned to increase the capacity (see section 4.2 HAZUS MH). HAZUS 99 will be phased out after the new release, currently planned for summer 2003. Training is no longer available for HAZUS 99, though support will continue on the User Group websites indefinitely.

B. Product Materials

CD

HAZUS 99 Software
FEMA Central Region GIS Data
Technical & User's Manuals

C. Product Support Information

Marketing Literature

FEMA's HAZUS website www.fema.gov/hazus
NIBS website http://nibs.org/hazusweb/

User Literature

Guide to Using HAZUS for Mitigation
Estimated Annualized Earthquake Losses for the Untied States *(hardcopy only)*
Brochures on Wind, Flood and Earthquake *(hardcopy only)*
General HAZUS brochure *(hardcopy only)*
Getting Back to Business *(hardcopy only)*
How to Create a HAZUS User Group
HAZUS Case Studies http://www.fema.gov/hazus/cs_main.shtm
Application of HAZUS to the New Madrid Earthquake Project

4.2 HAZUS MH Upgrade

Efforts are currently underway to release HAZUS MH, which also contains modules for hurricanes (not usable for winds or tornados) and floods. Metadata, contact information and websites are the same as for HAZUS 99. The upgrade will require ArcGIS 8.x. Hamilton and Marion counties comprise one of the 14 pilot areas for the new release, and Kevin Mickey at The Polis Center is working with FEMA on training to be performed at SEMA and at Northern and Southern Indiana sites to be determined.

Kevin Mickey, Training Manager
The Polis Center at IUPUI
1200 Waterway Boulevard, Suite 100
Indianapolis, IN 46202
Phone: (317) 278-2582 / Fax: (317) 278-1830
E-mail: kmickey@indiana.edu

FEMA is only offering training courses on HAZUS MH (at National Emergency Training Institute in Maryland):

COURSE	DESCRIPTION
HAZUS-MH Basic	Provides local, state, and regional officials with a working knowledge of the HAZUS-MH methodology and the GIS-based software. Gives a strong understanding of the multi-hazard applications of HAZUS toward mitigation, response, recovery and risk management. Prerequisites: The ESRI online GIS tutorial, Intro to ArcView 8.2, is strongly recommended.
Advanced HAZUS-Earthquake	Provides in-depth instruction on the use of HAZUS-MH for advanced applications related to earthquake loss modeling. Prerequisites: HAZUS-MH Basic and strong working knowledge of ArcGIS.
Advanced HAZUS- Flood	Provides in-depth instruction on the use of HAZUS-MH for advanced applications related to flood loss modeling. Prerequisites: HAZUS-MH Basic and strong working knowledge of ArcGIS and Spatial Analyst.
Advanced HAZUS- Wind	Provides in-depth instruction on the use of HAZUS-MH for advanced applications related to wind loss modeling. Prerequisites: HAZUS-MH Basic and strong working knowledge of ArcGIS.
HAZUS- MH Data Management	Provide in-depth instruction on collecting and processing high-resolution hazard/inventory data and integrating the data into HAZUS-MH. Three data manipulation tools will be discussed: Building Inventory Tool (BIT), Flood Inventory Tool (FIT), and Inventory Collection and Surveying Tool (InCAST). Prerequisites: HAZUS-MH Basic and strong working knowledge of ArcGIS.

Introduction to HAZUS-MH	1-to 3-day course to introduce HAZUS-MH. Field-offered course for State and local people and to provide at conferences. The course starts with an executive overview/briefing presentation showing basics of HAZUS and specific. Followed by a one-day discussion of one hazard, which could be hands on, in a computer setting, with scenarios that are peril-specific. Groups requesting this class could choose one, two, or three perils. This will determine length of course.
Using HAZUS in Mitigation Planning	1-day course under revision to show the application of HAZUS in the mitigation planning process. Revisions will update course for HAZUS-MH and the DMA2000 Mitigation Planning requirements.

HAZUS would be a very useful tool, provided the new release is on schedule (summer 2003). At this point, it is already 9 months overdue. Any plans to use HAZUS MH for hurricane or flood analysis should take this into account.

5. CVAT: Community Vulnerability Assessment Tool

A. Product Overview

Product Description

CVAT is a stand alone informational aid which provides a framework for conducting a comprehensive community-wide vulnerability assessment. It is a methodology, with step-by-step instructions, that helps local and state governments determine and prioritize their vulnerability to hazards. It is very general in scope and provides a template for analysis, along with some basic examples. In addition, a comprehensive case study of how the application was used in New Hanover County, North Carolina is included with the program.

The Damage Assessment Tool is an ArcView 3.1 application that was developed for New Hanover County. This extension can be used with any other city or county parcel data, provided the database has been converted into an ArcView shapefile. Users input data regarding damage to homes and business, and the tool creates a database, plots the data and populates forms required by FEMA for damage reporting.

GIS Data (Metadata)

Included on the CD are tables, collected by the National Oceanic and Atmospheric Administration (NOAA), with data on the pilot project in New Hanover County. Metadata is included for each dataset following FGDC standards. There is no national or local (Indiana) data, though the CD does include links to free and low-cost data providers.

Recommended Use

Community vulnerability assessment of hazards
Damage reporting to FEMA

Sponsor Agency/Product Developer: National Oceanic and Atmospheric Administration (NOAA), Coastal Services Center

Point of Contact Information
Russell Jackson, Coastal Hazard Specialist
National Oceanic and Atmospheric Administration, Coastal Services Center
2234 South Hobson Avenue
Charleston, South Carolina 29405-2413
Phone: (843) 740-1200 / Fax: (843) 740-1224
Direct Phone: (843) 740-1188
E-mail: russell.jackson@noaa.gov

Technical Assistance E-mail: clearinghouse@csc.noaa.gov

Current Users

List of Current Users

New Hanover County, North Carolina
Rhode Island Emergency Management Agency (RIEMA)
State of New Hampshire
Maui County, Hawaii

Reference Sites

CVAT homepage http://www.csc.noaa.gov/products/nchaz/startup.htm
State of Rhode Island Hazard Assessment Report – includes chapter on methodology, which was based on CVAT, and adapted for state-wide use
http://www.csc.noaa.gov/rihazard/index.html

Training

Tutorial included on CD

CVAT training is offered to NOAA partners, who are predominantly state and local coastal resource managers, emergency managers and planners. The course is offered at NOAA's South Carolina offices or brought to the local host. For scheduling or other information, contact Lisa Flax Lisa.Flax@noaa.gov

Product Contents

Vulnerability Assessment Methodology
Damage Assessment Tool with tutorial

Product Requirements

Explorer version 3.0 or higher or Netscape version 4.5 or higher; **or**
ArcExplorer GIS Data Explorer (included free on CD); **or**
ArcView 3.1 or higher (for use with Damage Assessment Tool)

How to Get Product

Order form on-line at http://www.csc.noaa.gov/products/nchaz/startup.htm

Product History

Developed from a FEMA hazard assessment pilot project in New Hanover County, North Carolina. NOAA created CVAT, which was implemented with their assistance by New Hanover County. The current methodology was released in 1999.

Future Enhancements

There are no specific plans for a new release, but general research into methodologies is ongoing.

Data

North Carolina Data was collected from various sources by NOAA Coastal Services Center in 1999. Below is a sample of what was used.

FEATURE
Risk Consideration Areas
Earthquake Risk Consideration Area
Erosion Risk Consideration Area
Flood Risk Area
Hazardous Materials Spill Risk Area
Storm Surge Risk Area
Tornado Risk Consideration Area
Toxic Release Risk Area
Wind Risk Consideration Area
Critical Facilities
Communication
Critical Facility (All Classes)
Fire and Rescue
Government
Hospital and Nursing Home
Police
School
Shelter
Transportation
Utilities
County Infrastructure
Building Footprint
County Boundary
Evacuation Route
Marina
Ocean Pier

FEATURE
Environmental
Federal Land
Fisheries Nursery Area
Hazardous Substance Disposal Site
River
Undeveloped by Land Cover
Environmental (cont'd)
Water
New Hanover County Park
NPDES Permit Site
Solid Waste Facility
Toxic Release Inventory Site
Wetland
Land Use
High-Need Residential
High-Risk Undeveloped Land
Land Use - Agriculture
Land Use - Manufacturing
Land Use - Residential
Target Retail/Wholesale Trade
Target Services
Target Transportation
Societal
Block Group
COBRA Designation

Summary

This methodology is fairly general. It provides a structure to use when conducting a community vulnerability assessment. The Damage Assessment Tool, also included on the CD, is a more practical, hands-on application with immediate benefits for reporting to FEMA.

Unlike the other tools, this is a methodology - a process rather than an application. As such, there are no traditional user groups or technical assistance. The tutorial is easy to follow, and the case studies are useful. The CVAT methodology is part of the larger mitigation and assessment discussion at NOAA.

B. Product Materials

CD
CVAT Methodology
Tutorial

C. Product Support Information

Marketing and User Literature

CVAT homepage http://www.csc.noaa.gov/products/nchaz/startup.htm

North Carolina Case Study http://www.csc.noaa.gov/vata/cvam.pdf

Vulnerability Assessment Techniques and Applications: NOAA group that hosts workshops on assessment methodology http://www.csc.noaa.gov/vata/

6. Inland Waterways Spill Response Mapping Project/Inland Sensitivity Atlas

A. Product Overview

Product Description

The Oil Pollution Act of 1990 (OPA) mandated nationwide preparation of oil spill contingency plans and documentation of spill-sensitive resources. The U.S. Environmental Protection Agency holds the lead coordinating role for contingency planning in inland zones. To meet the requirements of the OPA, the Inland Waterways Spill Response Mapping Project, administered by the Upper Midwest Environmental Sciences Center (UMESC), has developed a geographic information system (GIS) to spatially document sensitive resource areas within EPA Region 5, which includes Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

The Inland Sensitivity Atlas provides community planners and oil spill responders with information on resources that may be at risk during an oil spill. It includes atlas maps and data for all Indiana counties. The maps depict environmentally sensitive areas, hydrology, economically sensitive areas, tribal areas, potential spill sources, and transportation corridors against a backdrop of scanned images from U.S. Geological Survey quadrangles.

The information on is provided in several formats including Marplot MIE files, Arc/Info export files, Adobe Acrobat PDF files, and ArcView shapefiles. The MIE files can be imported directly into Marplot. The Arc/Info export files can be imported into Arc/Info or ArcView GIS.

GIS Data (Metadata)

Data are collected through partners such as the Upper Mississippi River Basin Association and the Great Lakes Commission. These data are processed at UMESC.

Metadata files for the Central Indiana Mapping Area data sets are included with each CD. These documentation files were compiled using Federal Geographic Data Committee standards.

Recommended Use

Oil spills in marine environment, but the GIS data included with the product related to critical infrastructure and sensitive species is a valuable economic resource for other uses.

Sponsor Agencies:

Point of Contact Information

U.S. Environmental Protection Agency Region 5
Sheila Calovich
Emergency Response Branch
77 West Jackson Boulevard (SE-5J)
Chicago, IL 60604

Phone: (312) 353-1505
E-mail: ospills@epa.gov

Great Lakes Commission
Thomas Rayburn
Eisenhower Corporate Park
2805 S. Industrial Hwy, Suite 100
Ann Arbor, MI 48104-6791
Phone: (734) 971-9135 / Fax: (734) 971-9150
E-mail: tray@glc.org

Upper Mississippi River Basin Association
Barbara Naramore
415 Hamm Building
408 St. Peter Street
St. Paul, MN 55102
Phone: (651) 224-2880 / Fax: (651) 223-5815
E-mail: bnaramore@umrba.org

Developer Agency: USGS Upper Midwest Environmental Sciences Center

Point of Contact Information
Upper Midwest Environmental Sciences Center
2630 Fanta Reed Road
La Crosse, Wisconsin 54603
Kevin Hop
Phone: (608) 783-7550 ext. 46
Daniel Fitzpatrick
Phone: (608) 783-7550 ext. 12 / E-mail: daniel_fitzpatrick@usgs.gov

General E-mail: epa_coordinator@umesc.er.usgs.gov.

Current Users

List of Current Users
US EPA Region V: Rouge River spill, fall 2002
77 West Jackson Boulevard (SE-5J)
Chicago, IL 60604
Sheila Calovich
Phone: (312) 886-7258 / E-mail: calovich.sheila@epa.gov
Ann Whelan
Phone: (312) 886-7258 / E-mail: whelan.ann@epa.gov

Reference Sites

EPA Inland Waterways Spill Response Mapping Project website
http://www.umesc.usgs.gov/epa_atlas/overview.html

USGS website http://www.umesc.usgs.gov/epa_iwmp.html

EPA Region 5 website http://www.epa.gov/Region5/

USGS Upper Midwest Environmental Sciences Center http://www.umesc.usgs.gov/

Great Lakes Commission Freshwater Spills Information Clearinghouse
http://www.freshwaterspills.net

Great Lakes Commission web: http://www.glc.org

Upper Mississippi River Basin Association web: http://www.umrba.org/

Local Users
Indiana Department of Environmental Management
Max Michael
Jeff Sewell
100 N. Senate Ave
P.O. Box 6015
Indianapolis, Indiana 46206-6015
Phone: (317) 308-3049

Training
No specialized training required.

Product Contents
US Inland Sensitivity Atlas

Product Requirements
The map files are in several different formats. One of the following programs are required to open them.

Arc/Info Export files: After they are unzipped, the Arc/Info Export files have the .e00 file extension and can be imported into **Arc/Info**, ArcView, as well as other GIS programs.

ArcView Shapefiles: The ArcView shapefiles contain double precision GIS data. After they are unzipped, the shapefiles are then ready to use in **ArcView 3.x**.

MARPLOT Import/Export files: The Marplot Import/Export (MIE) files will import into **MARPLOT**. After the file is unzipped, two MIE files are available in either NAD27 and NAD83 geodetic datums.

Adobe Acrobat PDF files: The Inland Sensitivity Atlas maps and documents are stored as Adobe Acrobat PDF files. **Adobe Acrobat Reader 4.0** software is needed to view these files.

How to Get Product

Download or order CDs from http://www.umesc.usgs.gov/epa_atlas/register1.html. Registration required.

Product History

The Project largely owes its existence to the catastrophic 1989 oil spill from the Exxon Valdez. Shortly after the disaster, the U.S. Congress passed the Oil Pollution Act of 1990 as an amendment to the Clean Water Act. The Oil Pollution Act mandates that the Environmental Protection Agency and the U.S. Coast Guard prepare Area Contingency Plans to improve the efficiency of spill response efforts.

The current version of the Atlas was produced in February 2003.

Planned Enhancements

Continuing to produce maps for all of EPA Region 5. Wabash River area in Illinois remains, as well as much of the upper Mississippi. Indiana is completed.
Adding HAZMAT layer in 2004.

Data

Metadata for each data layer in the mapping area has been provided as a simple text file that can be viewed by any word processing software and printed. The metadata files are named after the associated shapefile. For example, the shapefile waubac.shp has a metadata file named waubac.txt.

FEATURE	SOURCE	DATED	FORMAT
Southern Indiana CD	Indiana counties of Bartholomew, Brown, Clark, Clay, Crawford, Daviess, Dearborn, Decatur, Delaware, Dubois, Fayette, Floyd, Franklin, Gibson, Greene, Hamilton, Hancock, Harrison, Hendricks, Henry, Jackson, Jefferson, Jennings, Johnson, Knox, Lawrence, Madison, Marion, Martin, Monroe, Morgan, Ohio, Orange, Owen, Perry, Pike, Posey, Putnam, Randolph, Ripley, Rush, Scott, Shelby, Spencer, Sullivan, Switzerland, Union, Vanderburgh, Vigo, Warrick, Washington, and Wayne		
Sensitive Species Data	Inland Waterways Spill Response Mapping Project	01/2002	Polygon
State Boundaries			Polygon
Great Lakes			Polygon
Boat Accesses	Great Lakes Commission	10/2001	Point
Mapping Area Counties			Polygon
Non-navigational Dams	Great Lakes Commission	10/2001	Point
1:100,000-scale Index	Inland Waterways Spill Response Mapping Project	01/2002	Polygon
1:25,000-scale Inset Index	Inland Waterways Spill Response Mapping Project	01/2002	Polygon
Navigational Locks and Dams	Great Lakes Commission	10/2001	Point

FEATURE	SOURCE	DATED	FORMAT
Managed Resource Areas	Great Lakes Commission	10/2001	Polygon
Marinas	Great Lakes Commission	10/2001	Point
Pipelines	Great Lakes Commission	10/2001	Line
Fixed Oil Storage Facilities	Great Lakes Commission	10/2001	Point
1:24,000-scale Quadrangle Boundaries			Polygon
Railroads	Bureau of Transportation Statistics	1997	Line
Major Roads	Geographic Data Technology, Inc.	1999	Line
Special Designated Resource Areas	Great Lakes Commission	10/2001	Polygon
Streams	Geographic Data Technology, Inc.	1999	Line
Major Water Features	Geographic Data Technology, Inc.	1999	Polygon
Water Intakes	Great Lakes Commission	10/2001	Point
Middle Ohio River CD	Middle Ohio River. Ohio counties of Hamilton, Clermont, Brown, Adams, and Scioto; Indiana counties of Dearborn, Ohio, Switzerland, Jefferson, Clark, and Floyd; Kentucky counties of Boone, Campbell, Kenton, Pendleton, Gallatin, Bracken, Greenup, Mason, Lewis, Carroll, Trimble, Oldham, Jefferson, and Bullitt		
Sensitive Species Data	Inland Waterways Spill Response Mapping Project	08/1999	Polygon
Great Lakes			Polygon
EPA Region 5 State Boundaries			Polygon
Boat Accesses	Great Lakes Commission	02/2000	Point
Mapping Area Counties			Polygon
on-navigational Dams	Great Lakes Commission	02/2000	Point
1:100,000-scale Index	Inland Waterways Spill Response Mapping Project	09/1999	Polygon
1:25,000-scale Inset Index	Inland Waterways Spill Response Mapping Project	09/1999	Polygon
Navigational Locks and Dams	Great Lakes Commission	02/2000	Point
Managed Resource Areas	Great Lakes Commission	02/2000	Polygon
Marinas	Great Lakes Commission	02/2000	Point
Pipelines	Great Lakes Commission	02/2000	Line
Fixed Oil Storage Facilities	Great Lakes Commission	02/2000	Point
1:24,000-scale Quadrangle Boundaries			Polygon
Special Designated Resource Areas	Great Lakes Commission	02/2000	Polygon
Water Intakes	Great Lakes Commission	04/2000	Point

FEATURE	SOURCE	DATED	FORMAT
Central Indiana CD	Indiana counties of Adams, Allen, Benton, Blackford, Boone, Carroll, Cass, Clinton, De Kalb, Fountain, Fulton, Grant, Howard, Huntington, Jay, Kosciusko, Miami, Montgomery, Parke, Pulaski, Tippecanoe, Tipton, Vermillion, Wabash, Warren, Wells, White, and Whitley. This mapping area contains in part, the major watersheds of the Wabash River, White River, and Kankakee River.		
Sensitive Species Data	Inland Waterways Spill Response Mapping Project	02/2002	Polygon
State Boundaries			Polygon
Great Lakes			Polygon
Boat Accesses	Great Lakes Commission	12/2001	Point
Mapping Area Counties			Polygon
Non-navigational Dams	Great Lakes Commission	12/2001	Point
1:100,000-scale Index	Inland Waterways Spill Response Mapping Project	02/2002	Polygon
1:25,000-scale Inset Index	Inland Waterways Spill Response Mapping Project	02/2002	Polygon
Managed Resource Areas	Great Lakes Commission	12/2001	Polygon
Marinas	Great Lakes Commission	12/2001	Point
Pipelines	Great Lakes Commission	12/2001	Line
Fixed Oil Storage Facilities	Great Lakes Commission	10/2001	Point
1:24,000-scale Quadrangle Boundaries			Polygon
Railroads	Bureau of Transportation Statistics	1997	Line
Major Roads	Geographic Data Technology, Inc.	1999	Line
Special Designated Resource Areas	Great Lakes Commission	10/2001	Polygon
Streams	Geographic Data Technology, Inc.	1999	Line
Major Water Features	Geographic Data Technology, Inc.	1999	Polygon
Water Intakes	Great Lakes Commission	12/2001	Point
Northern Indiana CD	Indiana counties of Elkhart, Jasper, Lagrange, Lake, La Porte, Marshall, Newton, Noble, Porter, St. Joseph, Starke, and Steuben.		
Great Lakes			Polygon
Sensitive Species Data	Inland Waterways Spill Response Mapping Project	10/2001	Polygon
State Boundaries			Polygon
Boat Accesses	Great Lakes Commission	08/2001	Point
Mapping Area Counties			Polygon
Non-navigational Dams	Great Lakes Commission	10/2001	Point
Environmental Sensitivity Index	NOAA		
1:100,000-scale Index	Inland Waterways Spill Response Mapping Project	10/2001	Polygon

FEATURE	SOURCE	DATED	FORMAT
1:25,000-scale Inset Index	Inland Waterways Spill Response Mapping Project	10/2001	Polygon
Managed Resource Areas	Great Lakes Commission	08/2001	Polygon
Marinas	Great Lakes Commission	10/2001	Point
Pipelines	Great Lakes Commission	10/2001	Line
Fixed Oil Storage Facilities	Great Lakes Commission	10/2001	Point
Railroads	Bureau of Transportation Statistics	1997	Line
Major Roads	Geographic Data Technology, Inc.	1999	Line
Special Designated Resource Areas	Great Lakes Commission	10/2001	Polygon
Streams	Geographic Data Technology, Inc.	1999	Line
Major Water Features	Geographic Data Technology, Inc.	1999	Polygon
Water Intakes	Great Lakes Commission	10/2001	Point

Summary

This is a thoroughly researched and well-supported project. The CD's are standard for responders in many other areas of Region 5, primarily because the maps of Indiana have not been available for as long.

B. Product Materials

CD

Inland Sensitivity Atlas, 4-CD set:
Northern Indiana
Central Indiana
Southern Indiana
Middle Ohio River

C. Product Support Information

Marketing and User Literature

EPA Inland Waterways Spill Response Mapping Project website
http://www.umesc.usgs.gov/epa_atlas/overview.html

USGS website http://www.umesc.usgs.gov/epa_iwmp.html

7. GNOME: General NOAA Oil Modeling Environment

A. Product Overview

Product Description

GNOME is an oil trajectory model, which predicts how wind, currents, and other processes might move and spread oil spilled on the water. It shows how a spill is affected by inexactness ("uncertainty") in current and wind observations and forecasts, as well as how the spill will change chemically and physically ("weather") during the time that it remains on the water surface.

To use GNOME, users describe a spill scenario by entering information into the program – time, amount, wind direction, etc. In cases where additional information is required, GNOME provides reference websites where the user can find current information on circulation patterns or river flow data. Using the input, GNOME creates and displays an oil spill "movie" showing the predicted trajectory of the oil spilled in your scenario.

GNOME uses Location Files, maps that include environmental information about specific areas (Long Island Sound, Delaware Bay, Boston Vicinity, etc.). The files are produced by the National Oceanic and Atmospheric Administration (NOAA) and available on-line for free. Reference websites are also provided for each Location File, to assist the user in gathering general information about the area. GNOME will not work without Location Files.

GIS Data (Metadata)

Each Location File has an associated User's Guide, which includes a Technical Documentation section. Listed are the background, current patterns, works cited and locations of additional on-line information.

Recommended Use

Oil spills in marine environment

Sponsor Agency/Product Developer: National Oceanic and Atmospheric Administration, Office of Response and Restoration (NOAA OR&R)

Point of Contact Information
Ron Schuster
Hazardous Materials Response Division of NOAA OR&R
7600 Sand Point Way NE
Seattle, WA 98115
Phone: (206) 526- 6317 / Fax: (206) 526-6329
GNOME specialist: ORR.GNOME@noaa.gov

Current Users

List of Current Users
US Navy

Reference Sites
GNOME homepage http://response.restoration.noaa.gov/software/gnome/gnome.html

Local Users
Unknown

Training
GNOME Guided Tour http://response.restoration.noaa.gov/software/gnome/tour.html Learn to operate GNOME, as well as the fundamental concepts you need to know to use GNOME effectively.

GNOME example problem sets
http://response.restoration.noaa.gov/software/gnome/examples.html Run GNOME with different tides, different wind speeds and directions, and with different current patterns or river flow rates to learn how these conditions influence oil spill trajectories.

For training in the use of Diagnostic Mode, contact NOAA HAZMAT at
GNOMEWizard@hazmat.noaa.gov or (206) 526-6317.

Product Contents
GNOME Software http://response.restoration.noaa.gov/software/gnome/gnomeinfo.html
GNOME Manual
http://response.restoration.noaa.gov/software/gnome/pdfs/GNOME_Manual.pdf
ArcView Extension http://response.restoration.noaa.gov/software/gnome/avx.html

Product Requirements
Product is very small, so developers did not calculate hardware requirements.

How to Get Product
Download from http://response.restoration.noaa.gov/software/gnome/gnomeinfo.html

Product History
First released July 1999. Development team also produces location files, which are updated and posted regularly. Current version is GNOME 1.2.2 released October 2002.

Planned Enhancements

Additional Location Files

Allow GNOME to accept formats used in the USGS Coastline Extractor http://rimmer.ngdc.noaa.gov/coast/, a source of detailed coastline data for the U.S. and the world. Data currently usable, but must be modified to bna format. The Coastline Extractor page also makes river locations and political boundaries available.

Upcoming improvements/releases regularly posted here http://response.restoration.noaa.gov/software/gnome/news.html

Data

A collection of all available Location Files is provided at http://response.restoration.noaa.gov/software/gnome/locfiles.html, where the files are free to download. Each file includes a map, a User's Guide and sample spills specific to the area.

Atlantic Region US
Boston and Vicinity
Casco Bay, Maine
Central Long Island Sound
Delaware Bay
Narragansett Bay, Rhode Island
San Juan, Puerto Rico
St. Johns River, Florida

Gulf of Mexico Region US
Galveston Bay
Mobile Bay
Tampa Bay

Pacific Region US
Apra Harbor, Guam
Columbia River Estuary
Glacier Bay, Alaska
Harrison and Gwydyr Bays, Alaska
Kaneohe Bay, Hawaii
Prince William Sound
Santa Barbara Channel (includes Santa Maria Basin)
San Diego Bay
Strait of Juan de Fuca

International Locations
ROPME Sea Area (Persian/Arabian Gulf)

If you do not see a Location File for your region of interest, contact NOAA HAZMAT at GNOMEWizard@hazmat.noaa.gov. Please describe the geographic extent of the region (e.g., latitude and longitude bounds) and explain the reason for your request.

Summary

GNOME must be used with Location Files provided by the Hazardous Materials Response Division of NOAA OR&R, which developed the program. They currently have a number of areas in their library (see above), which are available free of charge at their website. GNOME will only work with these location files. It is possible to create them for your area, but to do so requires hydronamic modeling experience and advanced training in the use of GNOME's Diagnostic Mode. Diagnostic Mode training is offered at HAZMAT's facilities in Seattle.

Once created in GNOME, files can be exported to ArcView 3.x.

The main obstacle to using this program effectively is the lack of Location Files for the Indiana region. There are plans to release the first files for lakes and rivers in the near future, though no specific plans have been made for the Great Lakes or the Ohio River.

NOAA takes requests for Location File creation. Priority is given first to Coast Guard requests, then federal/state/local agencies and finally private industry. Contact GNOMEWizard@hazmat.noaa.gov to join the queue.

B. Product Materials

CD

GNOME Software
GNOME Manual
ArcView 3.x Extension

C. Product Support Information

Marketing and User Literature

GNOME Factsheet http://response.restoration.noaa.gov/software/gnome/pdfs/GNOME.pdf

GNOME home page http://response.restoration.noaa.gov/software/gnome/gnome.html

GNOME: A New Spill Trajectory Model. Beegle-Kraus, C.J. *2001 International Oil Spill Conference*

8. ADIOS2: Automated Data Inquiry for Oil Spills

A. Product Overview

Product Description

ADIOS2 is an initial oil spill response tool for emergency spill responders and contingency planners. It integrates a library of approximately one thousand oils with a short-term oil fate and cleanup model to help you estimate the amount of time that spilled oil will remain in the marine environment, and to develop cleanup strategies.

ADIOS2 calculations combine real-time environmental data that you enter yourself with carefully researched chemical and physical property information in its oil library. It was designed to make use of as little information as possible, and to use information that can quickly be estimated or obtained in the field, such as wind speed(s), wave heights, water temperature, and salinity or density, the type and amount of oil or product spilled, and the rate and duration of the spill. The program provides you with a best-guess answer and also calculates possible ranges in the values of estimated spill properties.

There is an extensive on-line help system on the CD, as well. It includes training sections, explanations of functions and calculations, and detailed information about each of the oil library entries.

GIS Data (Metadata)

No GIS data is available with this program.

Recommended Use

Oil spills in marine environment

Sponsor Agency/Product Developer: National Oceanic and Atmospheric Administration, Office of Response and Restoration

Point of Contact Information

Jeff Lankford
Hazardous Materials Response Division of NOAA OR&R
7600 Sand Point Way NE
Seattle, WA 98115
Phone: (206) 526-6317 / Fax: (206) 526-6329

ADIOS specialist: ORR.ADIOS@noaa.gov

Current Users

List of Current Users
Unknown

Reference Sites
ADIOS homepage http://response.restoration.noaa.gov/software/adios/adios.html

Local Users
Unknown

Training
The CD contains extensive help files, including a section of training materials

Product Contents
ADIOS Software
Training Materials

Product Requirements
Product is very small, so developers did not calculate hardware requirements

How to Get Product
Download from http://response.restoration.noaa.gov/software/adios/getadios.html

Product History
Currently on version 2, released 12/28/2000.

Planned Enhancements
Currently working to resolve several bugs. New release will be posted on website as soon as it's available (original target date Winter 2002).

Data
ADIOS 2 comes with a tab-delimited standard oil library file called OILLIB. This library file contains information on oil properties for over a thousand listings of crude oils and refined oil products. This library was assembled from several different sources. Major sources were the catalog of crude oil and oil product properties maintained by Environment Canada, the crude oil analysis data bank produced by the U.S. Department of Energy, and the Oil Companies European Organization for Environmental and Health Protection oil list. Also, many oil shipping and producing organizations provided NOAA/HAZMAT with oil characteristics data. The names of these latter reference sources are displayed in the ADIOS standard oil library

window beside the name of the oil or oil product. Since sometimes information on the same oil came from different sources, you may see the same oil name listed with different references in the standard library. For example, there are nine listings for Arabian Medium crude oil, with information from nine different sources.

Summary

This is not a GIS product and there is no interface for any GIS products. It will, however, provide graphs and text analysis of spill trajectories. ADIOS2 has become world standard in part because it is free, and preferred by the Coast Guard.

B. Product Materials

CD

ADIOS Software

C. Product Support Information

Marketing and User Literature

ADIOS2 factsheet http://www.response.restoration.noaa.gov/software/adios/pdf/adios.pdf

ADIOS homepage http://response.restoration.noaa.gov/software/adios/adios.html

Abstract of peer review from *Environmental Modeling and Software*, Volume 17, 2002, pg. 191-199. www.elsevier.com/locate/envsoft

NOAA Oil and Hazardous Materials Spill Reports, May 2001 *(on CD only)*

C-TASC GIS Emergency Management Implementation Plan
Product Materials - CD Contents

Table of Contents

CD ONE

1. CATS: Consequences Assessment Tool Set
- ALOHA 5.2.3
- ALOHA ArcView 3.x Extension
- ALHOA Manual
- CATS License Agreement
- CATS User Manual (introduction only)

2. CAMEO: Computer-Aided Management of Emergency Operations
- ALOHA 5.2.3
- ALOHA ArcView 3.x Extension
- ALHOA Manual
- MARPLOT 3.3
- MARPLOT Manual
- MARPLOT Technical Documentation
- CAMEO*fm*
- CAMEO License Agreement
- CAMEO Manual

3. ALOHA: Areal Locations of Hazardous Atmospheres
- ALOHA 5.2.3
- ALOHA ArcView 3.x Extension
- ALHOA Manual

4. HAZUS 99: Hazards United States
- FEMA Central Region GIS Data
- HAZUS 99
- Manuals

CD TWO

5. CVAT: Community Vulnerability Assessment Tool
- CVAT Methodology
- Tutorial

6. Inland Waterways Spill Response Mapping Project/Inland Sensitivity Atlas (One of Three)
- Inland Sensitivity Atlas: Middle Ohio River

CD THREE

6. Inland Waterways Spill Response Mapping Project/Inland Sensitivity Atlas (Two of Three)
- Inland Sensitivity Atlas: Northern Indiana; Central Indiana

CD FOUR

6. Inland Waterways Spill Response Mapping Project/Inland Sensitivity Atlas (Three of Three)
- Inland Sensitivity Atlas: Southern Indiana

7. GNOME: General NOAA Oil Modeling Environment
- GNOME
- ArcView 3.x Extension
- GNOME Manual

8. ADIOS2: Automated Data Inquiry for Oil Spills
- ADIOS2

C-TASC GIS Emergency Management Implementation Plan
Product Support Information - CD and Binder Contents

Table of Contents

1. CATS: Consequences Assessment Tool Set

1. CATS Website http://cats.saic.com/
2. "Crisis Prediction Disaster Management." Swiatek, Joseph and Dean Kaul. June 1999. http://www.saic.com/products/simulation/cats/VUPQPV4R.pdf
3. Faster, Higher, Safer. *Government Technology*, October 2001. http://www.govtech.net/magazine/story.phtml?id=6085
4. Super Bowl XXXVII: CATS Was There. *SAIC Cover Story*. January 26, 2003. http://www.saic.com/cover-archive/natsec/cats.html
5. ESRI News - Fall 1999 ArcNews -- CATS for Emergency Response. *ArcNews*, Fall 1999. http://www.esri.com/news/arcnews/fall99articles/07-catsemer.html
6. User Forum http://cats.saic.com/

2. CAMEO: Computer-Aided Management of Emergency Operations

1. CAMEO Factsheet http://www.response.restoration.noaa.gov/cameo/pdf/cameo.pdf
2. EPA's CAMEO website http://www.epa.gov/ceppo/cameo/index.htm
3. NOAA's CAMEO website http://response.restoration.noaa.gov/cameo/intro.html
4. General information from EPA http://www.epa.gov/ceppo/cameo/what.htm##order
5. CAMEO help files http://www.epa.gov/ceppo/cameo/help/cameoTOC.htm
6. To subscribe to the CAMEO News Service, send mail to join-cameo@lists.epa.gov
7. CAMEO Technical Discussion https://yosemite.epa.gov/oswer/cameodisc.nsf/8178b1c14b1e9b6b8525624f0062fe9f!OpenView
8. Support forum for CAMEO http://www.epa.gov/ceppo/cameo/support.htm
9. CAMEO Toolkit: Includes information and links for ALOHA, MARPLOT and CAMEO http://www.response.restoration.noaa.gov/cameo/toolkit.html
10. NOAA Oil and Hazardous Materials Spill Reports, May 2001 *(on CD only)*
11. LandView 5 Overview http://landview.census.gov/geo/landview/lv5/lv5.html
12. LandView 5 Product Profile http://landview.census.gov/geo/landview/lv5/prodprof.pdf
13. LandView 5 Ordering Information http://landview.census.gov/mp/www/rom/msromlv45.html
14. Landview 5 Sample Data http://landview.census.gov/geo/landview/lv5help/deprofile.gif

3. ALOHA: Areal Locations of Hazardous Atmospheres

1. ALOHA Factsheet http://www.response.restoration.noaa.gov/cameo/pdf/aloha.pdf
2. EPA's CAMEO website, which includes ALOHA reference information http://www.epa.gov/ceppo/cameo/index.htm
3. NOAA's CAMEO website, which includes ALOHA reference information http://response.restoration.noaa.gov/cameo/intro.html
4. ALOHA Problem Solver Page http://www.epa.gov/ceppo/cameo/asolver.htm
5. Support forum for CAMEO (includes ALOHA discussions) http://www.epa.gov/ceppo/cameo/support.htm
6. CAMEO Technical Discussion (includes ALOHA support) https://yosemite.epa.gov/oswer/cameodisc.nsf/8178b1c14b1e9b6b8525624f0062fe9f!OpenView
7. ALOHA FAQ Page http://response.restoration.noaa.gov/cameo/alohafaq/faq.html

8. Archive of the "Ask Dr. ALOHA" newsletter column
   http://www.response.restoration.noaa.gov/cameo/dr_aloha/index.html
9. ALOHA Decision Keys: Step-by-step keys to decide whether you should use ALOHA for a particular accident scenario and which source modules you should choose
   http://www.response.restoration.noaa.gov/cameo/decision/keyindex.html
10. The ALOHA Decisions Game. Test your skill at telling when you can and can't use ALOHA
    http://www.response.restoration.noaa.gov/cameo/decision/decisiongame.html
11. ALOHA Technical Description. Some technical details about ALOHA and how it makes its calculations
    http://www.response.restoration.noaa.gov/cameo/alotech/alotech.html
12. The Level of Concern Page: Information to help you choose and use a Level of Concern (LOC) in ALOHA
    http://www.response.restoration.noaa.gov/cameo/locs/LOCpage.html
13. Evaporation Calculator http://response.restoration.noaa.gov/cameo/evapcalc/evap.html
14. Modeling Hydrochloric Acid Evaporation in ALOHA
    http://www.response.restoration.noaa.gov/cameo/hcl.pdf
15. Met Station Vendor List http://www.response.restoration.noaa.gov/cameo/sams.html

4. HAZUS 99: Hazards United States

1. FEMA's HAZUS website www.fema.gov/hazus
2. NIBS website http://nibs.org/hazusweb/
3. Guide to Using HAZUS for Mitigation http://www.fema.gov/hazus/dl_guide.shtm
4. How to Create a HAZUS User Group http://www.fema.gov/hazus/dl_user.shtm
5. HAZUS Case Studies http://www.fema.gov/hazus/cs_main.shtm
6. Application of HAZUS to the New Madrid Earthquake Project http://www.fema.gov/hazus/dl_eqmad.shtm
7. Estimated Annualized Earthquake Losses for the Untied States *(hardcopy only)*
8. Brochures on Wind, Flood and Earthquake *(hardcopy only)*
9. General HAZUS brochure *(hardcopy only)*
10. Getting Back to Business *(hardcopy only)*

5. CVAT: Community Vulnerability Assessment Tool

1. CVAT homepage http://www.csc.noaa.gov/products/nchaz/startup.htm
2. North Carolina Case Study http://www.csc.noaa.gov/vata/cvam.pdf
3. Vulnerability Assessment Techniques and Applications http://www.csc.noaa.gov/vata/

6. Inland Waterways Spill Response Mapping Project/Inland Sensitivity Atlas

1. EPA Inland Waterways Spill Response Mapping Project website
   http://www.umesc.usgs.gov/epa_atlas/overview.html
2. USGS website http://www.umesc.usgs.gov/epa_iwmp.html

7. GNOME: General NOAA Oil Modeling Environment

1. GNOME Factsheet http://response.restoration.noaa.gov/software/gnome/pdfs/GNOME.pdf
2. GNOME home page http://response.restoration.noaa.gov/software/gnome/gnome.html
3. GNOME: A New Spill Trajectory Model. Beegle-Kraus, C.J. *2001 International Oil Spill Conference*
4. NOAA Oil and Hazardous Materials Spill Reports, May 2001 *(on CD only)*

8. ADIOS2: Automated Data Inquiry for Oil Spills

1. ADIOS2 factsheet http://www.response.restoration.noaa.gov/software/adios/pdf/adios.pdf
2. ADIOS homepage http://response.restoration.noaa.gov/software/adios/adios.html
3. Abstract of peer review from *Environmental Modeling and Software*, Volume 17, 2002, pg. 191-199. www.elsevier.com/locate/envsoft
4. NOAA Oil and Hazardous Materials Spill Reports, May 2001 *(on CD only)*

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